

What is claimed is:

1. An article useful for assaying the effects of a plurality of formulations on the barrier properties of a test membrane, comprising a plurality of wells the wells (i) being constructed such that one end of the wells may be sealed with a piece of the test membrane, (ii) being further provided with openings through which formulations may be introduced, and (iii) being further provided with mechanical means for sealing the openings after the formulations have been introduced through the openings.
2. The article of claim 1 wherein the mechanical means for sealing the opening comprise magnetic or magnetizable spheres.
3. The article of claim 1 wherein the mechanical means for sealing the opening comprise one or more rotating rods.
4. The article of claim 1 wherein the mechanical means for sealing the opening comprise one or more sealing plates.
5. The article of claim 1 wherein the mechanical means for sealing the opening comprise spring-loaded balls.
6. The article of claim 1 wherein the mechanical means for sealing the opening comprise sealing balls affixed to plungers.
7. An article useful for assaying the effects of a plurality of formulations on the barrier properties of a test membrane, comprising:
  - (i) a receiver plate, the plate including a plurality of receiver-well through holes with openings on the faces of the plate and one or more sealing-rod holes whose axes are approximately in the plane of the plate and that intersect the through holes;
  - (ii) one or more cylindrical rods, the cylindrical rods including one or more transverse through holes and being disposed in the sealing rod holes.

- 8.** The article of claim 7 wherein the sealing rod holes have circular cross section.
- 9.** The article of claim 7 wherein the number of receiver-well through holes is less than about 5.
- 10.** The article of claim 7 wherein the number of receiver-well through holes is less than about 100.
- 11.** The article of claim 7 wherein the number of receiver-well through holes is less than about 1,000.
- 12.** The article of claim 7 wherein the number of receiver-well through holes is at least about 300.
- 13.** The article of claim 7 wherein the cylindrical rod is made of stainless steel.
- 14.** The article of claim 7 further comprising a test membrane disposed so as to seal on end of the receiver-well through holes.
- 15.** The article of claim 14 further comprising a donor plate, the donor plate including a plurality of donor well through holes and being disposed such that the test membrane seals one end of the donor well through holes.
- 16.** An article for assaying the interaction of ingredients in a first plurality of formulations with skin comprising:
  - (i) a second plurality of donor wells that can each be loaded with a formulation without contacting the skin;
  - (ii) a skin piece or a third plurality of skin pieces disposed such that one end of each such donor well is sealed by a skin piece;
  - (iii) a fourth plurality of receptor wells disposed, provided such that one end of each such receptor well is sealed by a skin piece.
- 17.** The article of claim 16 wherein each of said plurality of donor wells is provided separately with an electrode.

- 18.** The article of claim 16 wherein the receptor wells are provided with openings that may be sealed with magnetic or magnetizable balls whereby fluids in the receptor well may be retained in the receptor wells independent of the orientation of said article.
- 19.** The article of claim 16 wherein the receptor wells include a collapsible segment and a one-way whereby gas or liquid may be expelled from the receptor wells.
- 20.** The article of claim 16 wherein said plurality of donor wells and said plurality of receptor wells are equal in number, and each donor well has a matching receptor well on the opposite side of the test membrane.
- 21.** A method of expelling gas from a well that is partially filled with a liquid in an experiment to assay the effects of a formulation on a test membrane comprising:
  - (i) providing the well partially filled with the liquid, the well including a collapsible segment and a valve;
  - (ii) collapsing, partially or fully, the collapsible segment;whereby gas is expelled from the valve.
- 22.** The method of claim 21 wherein the well is a donor well.
- 23.** The method of claim 21 wherein the well is a receiver well.
- 24.** The method of claim 21 wherein the valve is a duck-billed valve.
- 25.** A method of measuring in high throughput the effectiveness of a plurality of formulations as exfoliants, comprising:
  - (i) providing a plurality of donor wells, the donor wells including a piece of skin which forms the donor well bottom;
  - (ii) introducing the plurality of formulations into the donor wells;
  - (iii) measuring the amount of skin debris suspended in the formulations.

- 26.** The method of claim 25 wherein the amount of skin debris suspended in the formulations is measured by light scattering.
- 27.** The method of claim 25 in which the amount of skin debris suspended in the formulation is measured by introducing a dye that will stain in the presence of protein and measuring optically the intensity of coloring in the suspension.
- 28.** The method of claim 25 further comprising the step of agitating the formulations prior to said measuring step.
- 29.** A method of assessing characteristics of a skin sample, comprising:
- (i) applying a voltage pulse between an electrode embedded in the internal skin layers of the skin sample and a second electrode in a conducting liquid in contact with the outermost skin surface;
  - (ii) monitoring the electrical response as a function of time after commencement of application of such voltage pulse;
  - (iii) calculating the Fourier transform of the electrical response as a function of time;
  - (iv) comparing the Fourier transform with similar Fourier transformed signals from model materials or with simulation.